

What we claim is:

1. A system for detecting arc faults in an electrical circuit, wherein the system comprises: a store of a plurality of temporal models of electrical events associated with arc faults and of events not associated with arc faults; an interconnection for extracting from said circuit electrical signals associated with electrical events in said circuit; a processor for processing the signals into a form suitable for comparison with said models; and a comparator for comparing the processed signals with said models to determine whether the event giving rise to said signals is an arc fault or not.
2. A system according to Claim 1, wherein said interconnection for extracting electrical signals includes a current sensor.
3. A system according to Claim 1, wherein said interconnection for extracting electrical signals provides an indication of voltage.
4. A system according to Claim 1 including a circuit breaker, and wherein said system is arranged to open said circuit breaker when an arc fault is detected.
5. A system according to Claim 1, wherein said temporal models are in the form of templates.
6. A system according to Claim 1, wherein said temporal models are in the form of stochastic models.

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7. A system for detecting arc faults in an electrical circuit, wherein said system includes an artificial neural net programmed to recognise features of different arcs so as to enable arcs caused by faults in said circuit to be distinguished from other arcs.
8. A system for detecting arc faults in an electrical circuit, wherein said system comprises: a store of a plurality of temporal models of electrical events associated with arc faults and of events not associated with arc faults; a current sensor for extracting from said circuit signals representative of current in said circuit; an output of voltage in said circuit; a processor for processing the current and voltage signals into a form suitable for comparison with said models; and a comparator for comparing the processed signals with said models to determine whether the event giving rise to said signals is an arc fault or not.
9. A system for detecting arc faults in an electrical circuit, said system comprising: a store of a plurality of temporal models of electrical events associated with arc faults and of events not associated with arc faults; means for extracting from said circuit electrical signals associated with electrical events in said circuit; means for processing said signals into a form suitable for comparison with said models; and means for comparing the processed signals with said models to determine whether the event giving rise to said signals is an arc fault or not.
10. A method of detecting an arc fault in a circuit comprising the steps of: extracting signals from said circuit; processing said signals into a form suitable for comparison;

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comparing the processed signals with a plurality of stored temporal models representative of both arc faults and of events not associated with arc faults; and providing an output in accordance therewith.

11. A method according to Claim 10, wherein said temporal models are in the form of templates.
12. A method according to Claim 10, wherein said temporal models are in the form of stochastic models.
13. A method according to Claim 10, wherein the extracted signals are representative of current in said circuit.
14. A method according to Claim 10, wherein the extracted signals are representative of voltage in said circuit.
15. A method according to Claim 10 including the step of supplying said output to a circuit breaker to open said circuit breaker when an arc fault is detected.
16. A method of detecting an arc fault in a circuit comprising the steps of: extracting signals from said circuit; processing signals into a form suitable for comparison; supplying the processed signals to an artificial neural net programmed to recognise features of different arcs so as to enable arcs caused by faults in said circuit to be distinguished from other arcs; and providing an output in accordance therewith.

17. A method according to Claim 16 including the step of supplying the output to a circuit breaker to open said circuit breaker when an arc fault is detected.
 18. A method of detecting an arc fault in a circuit comprising the steps of: extracting current and voltage signals from said circuit; processing said signals into a form suitable for comparison; comparing the processed signals with a plurality of stored temporal models representative of both arc faults and of events not associated with arc faults; and providing an output in accordance therewith to a circuit breaker in order to open said circuit breaker when an arc fault is detected.

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